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AUTHOR Jones, Neil; And Others
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ABSTRACT

This annotated bibliography lists publications of interest to curriculum researchers. It includes publications related to ways of speeding up the data collection and analysis phase of curriculum development as well as some publications relating to quantitative analysis methods. Papers, manuals, guides, workshop materials, learning modules, proceedings, and case studies are included. (YLB)

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TAFE CURRICULUM RESEARCH:
A REVIEW OF GROUP PROCESS METHODS
Descriptive bibliography

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FOREWORD

During the preparation of the report: TAFE Curriculum research: A review of group process methods we located many useful publications of interest to curriculum researchers. This bibliography includes publications which related to our particular interest in ways of speeding up the data collection and analysis phase of curriculum development but also includes some publications relating to quantitative analysis methods.

Adams, R.E. (1975). DACUM approach to curriculum, learning, and evaluation. Ottowa: Department of Regional Economics. Globe Printing and Lithography (Toronto) Ltd. 305 pp.

This original work on DACUM comprises nine parts and appendices. Part I analyses the problems in occupational training that can be overcome by devising an appropriate curriculum and learning model. Part II gives an overview of the DACUM system and discusses its potential for overcoming the stated problems.

Parts III through VIII are designed to serve as a manual for persons interested in developing and installing a DACUM program. Part III describes the process of developing DACUM charts. Part IV describes program development procedures and considerations. Parts V, VI and VII describe the operation of a program. Part V tells how to initiate the learner into the DACUM system, Part VI describes the way in which learning takes place and Part VII the way in which evaluation takes place and also includes a rationale for this approach. Part VIII is a summary of staff roles in the system, focusing on the instructor role and the role of the program co-ordinator.

Text refers to procedures and techniques tested in Nova Scotia NewStart projects. The appendices contain copies of the graphic Learning-Evaluation Model and Program Development Model with supporting materials, as well as DACUM charts.

Abram, R., Ashley, W., Faddis, C., & Wiant, A. (1982). Preparing for High technology: Programs that work. Columbus: Ohio State University, National Center for Research in Vocational Education. 57 pp.

Ten case studies of collaboration between post-secondary vocational institutions and industry are described which show various approaches to planning, developing, and implementing training programs for the changing needs in the high technology areas of industry.

Areas covered were advanced applications of micro-electronics, medical electronics, manufacturing, and office technologies. The initiatives used in these ventures included funding by industry, allowing instructors to spend time

working in the industry to gain practical experience, supply of equipment, and hosting of industry workshops.

Anderson, R. (1984). The use of cluster analysis to identify occupational parameters in Home Economics. Sydney: NSW Department of TAFE. 13 pp.

Explains the use of cluster analysis of questionnaire data to identify need and demand for vocational education. The procedure produces a dendrogram which identifies the similarities in skills across a range of occupations from those with the largest number of skills in common through to occupations with the least number of skills in common. The author contends that such an approach can be used to determine those job skills which need to be used as a basis for curriculum development.

Anderson, T. (1985). Composition post trade review. Sydney: NSW Department of Technical and Further Education. 35 pp.

Describes the research method and the results of an examination of need and demand for post-trade education for composition tradespersons in the pre-press section of the printing industry. Exploratory interviews and observations of work performed were carried out on a sample of four firms representing differences in technology from high-technology to older technology. A random survey of supervisors/plant managers was then carried out which examined equipment used, knowledge and skills required, and attitudes to a set of tentative course proposals expressed in terms of educational outcomes. The results showed that supervisors/plant manager saw a need for post-trade education in at least four broad areas: keyboarding/typesetting, make-up techniques, work organisation and supervision, and pre-press knowledge and skills. A rationale for the research methods used is provided, together with the questionnaires used in the exploratory and random survey phases.

Anderson, T. (1986). Future directions for trade education in graphic reproduction. Sydney: NSW Department of Technical and Further Education. 25 pp.

Describes the research methods used and the results of a review of the Graphic Reproduction Trade Course (School of Graphic Arts, Sydney). The review included interviews with plant managers plus observation of contemporary high technology equipment in use, followed by a Search

Conference on: 'Future directions for trade education in Graphic Reproduction'. A commentary on the use of the Search Conference Method is provided.

The results indicated the importance of (1) increasing the proportion of time devoted to education in computer applications in Graphic Reproduction, including electronic scanning, (2) merging the two previously separate strands - image preparation, and plate and cylinder preparation - and (3) the importance of students acquiring skills in problem solving and an understanding of how to forestall problems which may arise during the printing stage.

Archer, W.B. (1966). Computation of group job descriptions from occupational survey data. Personnel Research Laboratories. Aerospace Medical Division. Air Force Systems Command. Texas: Lackland Air Force Base. 33 pp.

Provides a very detailed step by step description of how group job description data is analysed. Ten cases are presented showing an inventory of the task statements for medical service workers. The analysis uses successive refinement of the task statements. Seven sections are covered: (1) introduction, (2) job inventory, (3) survey sample, (4) relative time-spent rating, (4) estimated percentages of work time, (6) special group job descriptions, and (7) automated job clustering.

Arvey, R.D., Maxwell, S.C., & Mossholder, K.M. (1979). Even more ideas about methodologies for determining job differences and similarities, Personnel Psychology, 32, 529-38.

These authors published a 1977 paper proposing a methodology for determining similarities among jobs. Subsequently other researchers have commented on and criticised the repeated measures analysis of variance procedure used by Arvey et al. In this paper the authors respond to their critics and propose an additional procedure - a multivariate approach to repeated measures data which might be more useful when detecting job differences. Also the assumptions and limitation of both the univariate and multivariate approaches to the problem are delineated, more precisely they argue, than the procedures suggested by their critics.

Banks, M.H., Jackson, P.R., Stafford, E.M., & Warr, P.B. (1983). The job components inventory and the analysis of jobs requiring limited skill, Personnel Psychology, 36, 57-66.

This article presents a description of an inventory approach to job analysis in relation to vocational preparation for young people in Britain. Five principal sections are recognised in the inventory: (A) Tools and equipment. (B) Perceptual and physical requirements. (C) Mathematical requirements. (D) Communications requirements. (E) Decision-making and responsibility.

The Job Components Inventory (JCI) provides an easy-to-complete questionnaire on the basis of whether a job incumbent does or does not agree with a stated job component. The procedure for testing reliability of supervisor's ability to complete JCI as compared to job holders is described. In their case study with engineering and clerical work the authors show the success in discriminating between occupational areas, job titles and organisations, using analysis of variance.

Bartlett, L. (1983). The rules of the game: Case study method and interpretation theory. Paper presented at the Annual Conference of the Australian Association for Research in Education. Canberra, Nov. 22-26. 17 pp.

This paper addressed the problem of interpretation in case study method and the related issue of decontextualisation and 'rules' for analysis of textual evidence. The concepts of perspective and interpretation are discussed. This is followed by a review and critique of the quasi-historical perspective in case study work. Stenhouse's nascent ideas about decontextualising evidence are discussed. 'Rules' for the decontextualisation of evidence are presented in the phenomenological hermeneutic and interpretation theory of Paul Ricour.

Battersby, D. (1978). The Delphi technique - a modern oracle? Rescent, 2(2), 93-9.

The Delphi technique was designed originally to apply the opinions of experts to urgent defence problems in the United States. Over the past two decades, Delphi has become more widely known for its use in Government, industry and management, and as a potentially viable instrument for those pursuing research in such diverse areas as: medicine, sociology, geography, chemistry, law, psychology, history and education.

Before examining uses of the Delphi method in this latter field, its characteristics and general applications are discussed. A paradigm of educational Delphi investigations is then developed, and from this, three case studies are chosen to exemplify particular uses of the technique. Finally, brief reference is made to some unanswered methodological questions concerning Delphi. (Authors' abstract).

Cary, J.W., & Salmon, P.W. (1976). Delphi and participatory planning: focusing on the planning process in an agricultural service organisation. School of Agriculture and Forestry. University of Melbourne. 52 pp.

This paper gives a clear insight into Delphi as a participatory planning technique, including strengths, limitations and cautions in using the method. It highlights the value of the Delphi method as being the clarification of issues rather than a direct solution to problems. A case study is provided.

CBE (1981) Gateway Technical Institute, Wisconsin: Kenosha. 194 pp.

This manual was designed to provide Gateway staff with step by step instructions on the development of competency based education (CBE) for occupational and general education programmes. It provides procedures and examples necessary to implement CBE. These include: developing a general statement of philosophy, stating the goals, preparing a descriptive list of occupations for which the programme prepares students, developing, communicating, and validating broad competencies, developing and revising instructional modules, developing individualised learning packages, and developing a competency certificate. Forms, flow charts, and sample curriculum are included.

Christie, A. (1983). Responding to changing community educational need. Institute of Technical and Adult Teacher Education Workshop. Sydney: Gazal House. 23 pp.

This paper is a collection of notes which accompanied a staff development workshop for which the author was workshop leader. The notes provide a direct and straightforward guide on how to assess community educational needs. The notes refer to types of needs, identifying needs, and developing a

community profile. Information relating to the setting up and participation in community networks is provided.

Clover, J. with Goode, T. (1982). Job analysis position paper. (Mimeographed). TAFE Clearinghouse. 19 pp.

Taking as a point of departure the need to adapt educational provision to the problem of rapid technological change, this paper describes approaches for analysing occupations. These include observation/interview, the Critical Incident Technique, procession decision flowcharting, questionnaire surveys, group approaches, DACUM, and proficiency and psychological tests.

Collins, C. (1983). Needs, needs and needs. Paper presented at the Australian Association for Adult Education Research Network Conference. 33 pp.

This paper attempts to clarify needs assessment. Three different types of approaches to needs assessment are presented. These are the consumerist model, the liberal-democratic model and the radical model. The first is a model which is dominated by the consideration of what will be saleable in the market place; the second model emphasises meeting the needs of the individual adult learner, a self-actualising process; and the third model centres on meeting the needs of the wider community. The paper concentrates on discussing the ideology underlying each of these three models.

Cohen, L., & Manion, L. (1980). Research methods in education. London: Croom Helm Ltd. 328 pp.

Provides a comprehensive overview to the conduct of educational research. The author begins with a discussion on the nature of enquiry and then discusses a number of research processes in detail. These are historical research, developmental research, case study research, correlational research, ex-post facto research, experimental and quasi-experimental research, action research, triangulation, role playing, interview, the use of personal construct theory, and multidimensional measurement. Each is illustrated by examples.

Crombie, A. (1985). The nature and types of search conferences, International Journal of Lifelong Education, 4(1), 3-33.

Describes the Search Conference Method as a process containing the following

major steps: future scan, desirable and probable futures, prioritising, internal scan (i.e. trends occurring within the organisation), historical reconstruction, strengths and weaknesses ('what are we good at', 'what are we poor at?') and listing of issues and priorities for action planning.

The paper includes sections on 'action research', 'epistemology' and 'basic characteristics' of search conferences, such as 'futures-creative or problem solving' conferences. Major criticisms of the method are discussed. The author concludes that the Search Conference Method is 'well established as a reliable and frutiful process of participative planning ... a well structured but flexible and democratic process, which is subject to continuing modifications ... which can be applied to an enormous range of situations'.

Delbecq, A.L., Van De Ven, A.H., & Gustafson, D.H. (1975). Group techniques for program planning: a guide to nominal group and Delphi processes. Glenview Illinois: Scott, Foresman and Company. 174 pp.

Gives a comprehensive presentation of the Nominal Group Technique (NGT) by its originators and compares the method with the Delphi process. Chapters of the book cover group decision making in modern organisations, profile of small group decision making, and guidelines for conducting NGT in planning sessions. An appendix gives examples of Delphi questionnaires. The book gives detailed instructions for using NGT and is the basic reference for anyone interested in using the method. There are, however, some cautions which may be important to observe when applying the method in the Australian context (see Anderson and Jones, 1986 TAFE Curriculum research: A review of group process methods).

Dick, B. (1985). Search. St Lucia: University of Queensland, Centre of Applied Behavioural Science. 75 pp.

Provides an introduction and workbook for conducting an eight-hour planning workshop based on the Search Conference Method. Sections cover conducting a 'search', instructions to participants and the workbook itself which comprises a series of worksheets for defining probable futures, defining an ideal future, choosing the best areas for improvement, planning for action, and developing more specific plans of action. Some cautions in using the approach are discussed.

In condensing the Search Conference process from the more usual three day duration to eight hours, the author has synthesised elements of the Search Conference and the Nominal Group Technique (NGT). The author acknowledges that the workbook approach he advocates, and has found to be successful, may not be a Search Conference as was originally advocated.

Emery, M. (1982). Searching - for new directions, in new ways, for new times. Canberra: Australian National University, Centre for Continuing Education. 397 pp. (Photocopy).

In this book, Dr Emery attempts to bring together her experiences and those of others in using the Search Conference method 'to help others to learn how to make changes for themselves'. The book is in three parts: I Cultural Context, II Conceptual Tools for the Barefoot Social Scientist and III Practising the New Paradigm. This part deals with the Search Conference method in detail and covers design and structure, managing learning, stages in a search (preparation and planning; the question of numbers, duration and timetabling; the mini-search; venue and material equipment; and briefing of participants). The search and Delphi methods are compared and some 'don'ts' are listed. Design of participative workshops and variations are also covered.

Fetterman, D.M. (1982). Ethnography in educational research: The dynamics of diffusion, Educational Researcher, 11(3), 17-20.

Discusses the question of how ethnography is used in educational research and questions its use under the disguise of ethnographic study. The author feels that educational research should acknowledge when ethnographic techniques, procedures and methods of analysis are being used or modified. The paper goes on to discuss qualitative research in education in terms of ethnography taking into account the 'whole'.

Filstead, W.J. (1981). Using qualitative methods in evaluation research, Evaluation Review, 5(2), 259-68.

Gives a bibliography of 151 items divided into five sections: (1) The changing climate of educational research, (2) the philosophical and conceptual considerations, (3) specific data collection techniques/ethical questions/role(s) of the researcher, (4) examples of program evaluation employing qualitative methods, and (5) making sense of qualitative data.

Fraser, B.J. (1982). Annotated bibliography of curriculum evaluation literature. Tel-Aviv: Israel Curriculum Centre.

This book is a comprehensive reference to the range of items, models and techniques used in the field of program evaluation. Some of the book's vital statistics highlight this breadth of coverage. It deals with 39 books and 135 other selected references (mainly European and North American) which have appeared in the period 1963-81.

Gilpatrick, E. (1977). The health services mobility study method of task analysis and curriculum design. Research Report No.11, Vol.1. Basic Tools: Concepts, Task Identification, Skill Scales and Knowledge System. Health services mobility study. New York. 245 pp.

Contains Volume 1 of a four-volume report which describes the components of the method of task analysis, job ladder design and curriculum development used in the Health Services Mobility Study (HSMS). The system described can be used in whole or in part. The study aimed at improving upward mobility for individuals utilising prior education and experience.

Volume 1 is an introduction to the method and contains the basic task analysis instruments. Other volumes deal with the method in detail. The HSMS method of task identification and descriptive phase is time consuming. The task analysis method involves task identification, task description, the rating of tasks for skill and knowledge requirements and the grouping of tasks into interrelated hierarchies.

The data collection is done primarily through interviews with some observation if necessary. The tasks are then scaled for their skills and knowledge requirements - thus providing a matrix of raw data: the rows are tasks, the columns are the skill and knowledge variables, and the entries are the scale values. A form of factor analysis called 'Principle Components Analysis' is used to organise and simplify the data. The Task Frequency Scale, the sixteen skill scales and the knowledge scale and the forms used are included.

Goody, K. (1981). The role of occupational analysis in determining training requirements, Defense Force Journal, 34, 32-40.

Discusses the use of occupational analysis to determine training requirements with reference to the Australian Defence Forces. Comment is made on the utility as well as the limitations of the suite of computer programs known as the Comprehensive Occupational Data Analysis Programs (CODAP). A description is given of how data is processed by CODAP and how the information is used. Using incumbents as primary sources of data gathering, a task inventory is obtained by means of a questionnaire which then helps to group jobs as well as other useful information, e.g. job demand factors. Goody considers the accuracy of measuring 'percent time' spent on tasks in describing differences between job groups. Finally he discusses how CODAP produced information can be presented so that training managers can apply it in determining training requirements.

Haworth, D. (1980). The analysis of job needs in curriculum development. Sydney: NSW Department of TAFE. 40 pp.

Presents a view on how a syllabus is developed from task analysis data in NSW TAFE. Topics covered include educational assumptions, curriculum models, the historical development of curriculum activity in NSW TAFE, the components of work analyses and some of their relationships to curriculum development as well as political aspects of education. An appendix provides a listing of the competencies required by a curriculum developer in reviewing, developing and implementing a curriculum.

Harrison, D.P. (1976). Social science frontiers, social forecasting methodology: Suggestions for research. New York: Russel Syme. 85 pp.

Gives a comprehensive review of various methods used for social forecasting. Each is described briefly initially and then each is assessed critically in terms of the following: assumptions; forecast accuracy; robustness; data problems; selection of methods to be used; forecasting requirements; solving problems with forecasting and costs. The social forecasting methods considered are: extrapolative forecasting; intuitive forecasting; analogy forecasting; modelling forecasting; survey forecasting; criterion forecasting, environmental prediction;

network analysis; predictive social laws; clinical prediction; theoretical forecasting; intuitive planning; theoretical planning; and multi-method forecasting.

Herriot, R.E., & Firestone, W.A. (1983). Multisite qualitative policy research: optimising description and generalisability, Educational Researcher, 12. Feb. 14-19.

The authors examined multisite qualitative policy research both historically and practically using a survey of 25 projects which use this approach. Four design issues are discussed and the advantages and disadvantages are considered. The authors concluded that the future of such research is unclear.

Justice, F.L. (1975). Self-instructional unit on conducting task surveys for vocational curriculum development. Columbus: Ohio State University. Trade and Industrial Education Instructional Materials Laboratory. 177 pp.

This is a detailed document consisting of ten modules which will enable a person to know how to conduct a task survey. The author points out that 'not everyone will want to master each module to the same degree of competency, but the unit provides experience in the whole task survey process.' The ten modules are: Rationale for use of task surveys; developing a task list; determining relevant questions; identifying the population; selecting the sample size; selecting the sampling methods, developing the survey packet; distributing and collecting the survey packet; calculating summary statistics; and interpreting the data. There appear to be no detailed mathematical instruments.

Kordaszewski, J. (1969). A Polish contribution to job evaluation for non-manual workers. International Labour Review, (Geneva) 100(2), Aug., 141-57.

The author proposes an objective model for the comparative evaluation of non-manual jobs in material production and local government administration. As a background to his proposal he discusses job evaluation in socialist countries. The model comprises four composite factors of job difficulty, namely, complexity, responsibility, effort, and working conditions and danger. The author states that validation studies have shown that the model is suitable for comparative job evaluation for all non-manual workers from the clerk up to

and including the director. This model can also be adapted, it is said, to the job characteristics of manual workers. The author has also developed a personal skill variant of the above model.

Leagans, J.P. (1979). A concept of needs, Adult Education, 24(2) 83-95.

The author identifies needs as the difference between what 'is' (i.e. able to be observed) and what 'ought' to be (i.e. what should be valued). Eight questions are presented as being adequate in assessing the present situation. These are: (1) Does a need really exist? (2) Who has the need? (3) How many individuals or families have the need? (4) What is the people's attitude towards their situation? (5) Why does the need exist? (6) In what way is the need significant economically, socially or aesthetically? (7) What is the relative significance of the need? (8) What would likely be the consequences one or more years from now if no effort is made to meet the need?

The author then concentrates on the implications of a needs concept including the value judgement characteristics of the identification of the fact that significant needs are not always 'felt' by people, the different categories of needs and the careful consideration that must be given to what needs should be included in a programme. The different categories of needs are listed as: (1) physical needs - food clothing, housing. (2) Social needs - group status, affection, belonging. (3) Integrative needs - the need to relate oneself to something larger and beyond oneself, a philosophy of life.

Legacy, J., & Bennett, F. (1979). A comparison of the mailed questionnaire and personal interview methods of data collection for curriculum development in vocational education, Journal of Vocational Education Research, Summer, IV(3), 27-39.

The authors investigate two methods for collecting the data for a task analysis of retail floristry namely, mailed questionnaire and personal interview. From the results they conclude that the personal interview method reported a different set of beginner work tasks compared with a mailed survey. Also they recommend that 'whenever possible, the personal interview method of data collection should be used to identify and classify task analysis information'. If a mailed survey is used it is recommended that the results be validated by personal interview.

Levine, E.L., Ash, R.A., Hall, H.L., & Sistuck, F. (1981). Evaluation of seven job analysis methods by experienced job analysts. University of South Florida, Centre for Evaluation Research. 93 pp.

This paper addresses the question: what job analysis method is best (in terms of quality of outcomes and practicability) for which purposes? Ninety-three experienced job analysts responded to a mailed questionnaire that described seven job analysis methods: Threshold Traits Analysis, Ability Requirements Scales, Position Analysis Questionnaire (PAQ), the Critical Incident Technique, Task Inventory paired with CODAP computer software package, Functional Job Analysis (FJA), and Job Elements.

Task Inventory paired with CODAP and FJA were rated highest for job description and job classification. The PAQ and Task Inventory paired with CODAP were rated most standardised and most reliable, while PAQ was rated highest in terms of being ready for use 'off the shelf'. Combinations of methods were preferred over one method used alone, and combinations of methods were viewed as cost effective in that the increased cost is presumably outweighed by superior results. Some strengths and weaknesses of the methods are discussed.

Lewis, J.P. (1981). Pennsylvania's abstracts of research and related materials in vocational education. Harrisburg: Pennsylvania State Department of Education, 92 pp.

Contains 87 abstracts of research projects in vocational education conducted in Pennsylvania. It also lists the research, exemplary and curriculum activities which were conducted during the 1979-80 fiscal year. Each abstract includes the objectives, outcomes and intended audience of the project.

The following subjects are covered: educational administration; articulation (secondary and post-secondary); vocational attitudes; comparative education; curriculum; competency-based vocational education; research dissemination; in-service education; sex equity; special education; teacher education; and youth unemployment. Most of the relevant abstracts do not include the methodology used.

Linstone, H.A., & Turoff, M. (1975) (Eds) The Delphi Method: Techniques and Applications. Reading, Massachusetts: Addison-Wesley Publishing Company, Inc.

Covers the philosophical underpinnings of Delphi, its use in government policy planning and in business, evaluation of Delphi, the techniques of cross-impact analysis, specialised techniques for Delphi applications, the use of computers in Delphi, and pitfalls. A bibliography is included.

While the principlal use of Delphi has remained that of technological forecasting, it has been used in many other contexts in which judgmental information is indispensable. These include normative forecasts; the ascertaining of values and performances; estimates concerning the quality of life; simulated and real decision-making; and, so called 'inventive planning' - the identification or invention of potential measures that might be taken to deal with a given problem situation and the assessment of such proposed measures with regard to their feasibility, desirability and effectiveness.

Lissitz, R.W., Mendoza, J.L., Huberty, C.J., & Markos, H.V. (1979). Some further ideas on a methodology for determining job similarities/differences. Personnel Psychology, 32, 517-28.

Investigates methods for determining the similarities and/or differences between jobs. The authors began by briefly examining two procedures suggested by Mobley and Ramsay (1973): the cluster analysis approach; and Avery and Mossholder (1977): a univariate analysis of variance approach. They then suggest an alternative method to both of these approaches: the application of multivariate analysis of variance. This method is explained and an example given. The authors argue that this alternative method provides more information from the available data than the two previously mentioned approaches.

Lonsdale, A.J. (1975). Educational Research and Perspective, 2(2), 3-13.

Describes the Delphi technique, covering rationale, and an application of Delphi to assessing consensus judgements of a group of Western Australian educationalists on what should be the priorities in Australian education. Provides an evaluation of the technique and suggests modifications which

include the utilisation of small groups in carefully controlled face-to-face interaction.

Lund, B., & McGetchen, S. (1981). CE programmer's manual. Vancouver: British Columbia University. 155 pp.

Seven general areas of competence that continuing education is expected to be able to deal with are given in detail. These areas are: assess community needs; plan courses and programmes; promote and market courses and programmes; manage personnel; practise communication skills; conduct evaluation. Includes examples.

An annotated list of sources is given at the end of each chapter. The DACUM approach was used to develop this manual and a skill profile chart for professional development is provided.

McCormick, E.J. (1979). Job analysis: Methods and applications. New York: Amalcom. 111 pp.

Presents an in-depth description of the Work Performance Survey System (WPSS) which the author submits can be used in any organisation. WPSS is a computerised job inventory approach developed by the American Telephone and Telegraphy Company. 'Results obtained by this approach can be used to determine training requirements.' The author defines the terms used in job inventory analysis and the reliability of the inventory. Strategies for planning and implementing WPSS, guidelines for writing job task statements and developing a WPSS questionnaire are given together with numerous examples of instruments, techniques and ratings used.

Mead, M.A., Harry, L.A., & Essex, D.W. (1977). Performance content for job training. Vol. 5. Processing survey data: Technical appendices. Research and Development Series No. 125. Columbus: Ohio State University, Center for Vocational Education. 90 pp.

This institution aims 'to develop more effective procedures for identifying valid and necessary curriculum content'. One result of this aim has been the production of five volumes dealing with task analysis for curriculum development. The volumes are: introduction, stating the tasks of the job, identifying relevant job performance, deriving performance requirements for

training, and processing survey data - technical appendices.

The document deals with Volume 5 which describes a computer programme that can be used to process occupational survey data. It also summarises the results of analyses that were used when determining the task selection process of Volume 4 - Deriving Performance Requirements for Training.

The appendices are: Appendix A: Task Inventory System (TIS) Program. The computer programs used are fully reprinted and examples given. The TIS programs summarise data collected on any or all of 13 questions about each of (up to) 500 task items. Appendix B: Consists of a summary of factor and regression analyses used to establish the minimal amount of task information which could be used effectively in making curriculum content decisions.

The appendices are not essential to the use of the task survey process but they elaborate on how the survey data can be processed and partly substantiate the use of such data in curriculum development.

Melching, W.H., & Borcher, S.D. (1973). Procedures for constructing and using task inventories. Ohio State University. Center for Vocational and Technical Education. 56 pp.

This is a complete and comprehensive manual for the construction and use of task inventories. The authors present a detailed description of the many steps involved in using their approach to task inventories. Examples of each stage in developing a task inventory are given in the appendices. The text is divided into four sections. (1) Introduction and overview. (2) Construction of initial inventory of tasks. (3) Acquisition of information about each task. (4) Analysis of task data. Appendices cover: Duty statements; background information requirements; samples of introductory letters; task analysis format and samples of follow-up instruments.

Meleen, P. (1976). Identifying and planning for new and emerging occupations: Suggested guide. Contract Research Corporation, Belmont, Mass. 121 pp.

This project aimed to develop and apply a descriptive process to identifying, at a national level, new and emerging occupations for vocational program development. Eleven occupations which satisfied the stated criteria for new and emerging occupations were identified. The authors state that 'developing

an expanded network of information services is the key to planning for new and emerging occupations'. The process involves four key elements. (1) Isolation of trends and processes with impact on new occupational areas. (2) Use of occupational data bases and employment forecasts to pinpoint new areas and specific job titles for further investigation. (3) Development of alternative means for demand and growth rate estimates in new areas. (4) Discussion with knowledgeable employees and representatives of other organisations. The major portion of the report deals with describing the eleven occupational areas identified and publications used are given.

Nitish, D. (1984). Search conference and conscientisation process in building institutions. In, Alternative designs of human organisations. Beverley Hills: Sage Publications, 154-86.

Describes the relationships between the Search Conference and the processes of 'conscientisation' (Freire) - the means by which people, as knowing subjects, achieve an awareness of the socio-cultural reality which shapes their lives. The essential principles of the Search Conference are described with reference of M. and F. Emery (Centre for Continuing Education, Australian National University). The search conference is a participative form of social planning where the end results are as vital as the opportunity to create the learning-planning community, i.e. experts and laymen together, with emphasis on joint learning. The Search Conference is thus a work-related education process which encourages the participants to reconstruct organisations and perhaps to move these towards institutional forms. The paper deals with two cases of institutionalised planning in Third World countries.

Nadler, L. (1982). Designing training programs - the critical events model. Massachusetts: Addison-Wesley. 252 pp.

This book provides a fairly straightforward (although sometimes superficial) overview of the techniques and issues in training program development. It provides a clear discussion of organisational needs and how they are assessed. It introduces a range of methods which are useful to the program planner, and it raises a number of relevant issues connected with developing training objectives and program design.

Occupational data gathering and analysis in Queensland TAFE. (1983). Queensland: Department of Education. TAFE Curriculum Branch. 62 pp.

Covers occupational data gathering procedures based largely on a modification of the DACUM method for developing a curriculum. It includes field procedures, conference methods, desk procedures (reviewing existing data), evaluation, comparison, liaison, consumer research and adaptation of existing courses to new purposes.

Data gathering practices in Queensland TAFE are reviewed. The 'committee approach' is described in detail. Appendices cover procedures for developing new courses, revising courses, and questionnaire formats for gathering additional information related to the occupation and to each major duty performed within the occupation.

Orth, M.N., & Russel, J.F. (1980). Curriculum development needs for vocational education: New and changing occupations, Columbus: Ohio University, National Center for Research in Vocational Education. 134 pp.

A study described in this report, was conducted to provide information to national education policy makers regarding curriculum development needs for selected new and changing occupations. Outlines of a methodology for identifying such occupations and assessing the need for curriculum development is given. Because curriculum development is lengthy the authors suggest that 'vocational educators must actually anticipate the future in order to be prepared when it arrives'.

The methodology consists of a four-stage process: (1) Identification of new and changing occupations. (2) Collection of information on the identified occupations. (3) The location of curricula and program offerings that prepare individuals for the identified occupations. (4) Assessment of need for the development of curriculum for the identified occupations. Because of the nature of funding, the study generated no new data but only reviewed available data.

Four specific occupational titles and two industry related occupational areas were isolated as needing curriculum development on a national basis. Each is

studied in depth and the type of curriculum development needed is clarified.

Pennington, F.C. (1980). Assessing educational needs of adults. (New Directions for Continuing Education. Quarterly Sourcebook Series No.7). San Francisco: Jossey-Bass.

This volume contains a collection of excellent papers dealing with different aspects of needs assessment, with particular emphasis on non-vocational continuing education. There are three main sections. The first provides a broad overview of needs assessment concepts, models and characteristics. The second deals with needs assessment studies in various areas of continuing education. These include projects which focus on post-graduate students; the educationally under privileged; the chronically ill; and employees at a large telephone company. The third section comprises papers which address some of the issues raised in Section 1, but in more detail. Of particular interest in this section is a paper titled: 'Components of a major needs assessment study', which dissects the processes of needs assessment into 16 steps, and directs the reader to more detailed references.

Pratley, B. (1981). Starting from scratch: The 'what have we got' model of curriculum development for vocational preparation. Coombe Lodge Report, 14(8), 429-31.

This paper is one of a number of papers on 'supporting course development' presented in this Coombe Lodge Report. It is a brief paper which outlines the development of vocational courses using existing resources in cases where funds limit the introduction of new resources. Because of this, the author submits that there is a need for the development of staff skills in counselling, guidance, negotiation and assessing student's progress. The author contends that once staff have mastered these skills, these should be passed on to their students to provide them with help in coping with future change and in learning to be adaptable.

Pratt, D. (1982). A cybernetic model for curriculum development. Instructional Science, 11(1), 1-12.

Describes how a cybernetic model can be applied to curriculum development. This is a theoretical paper discussing six cybernetic principles: goal orientation, limitation of input, monitoring, control decisions, restoration of equilibrium and positive feedback. These principles are described and their application to

curriculum development is discussed. It is concluded that a cybernetic model can guide curriculum developers in designing learning systems which produce high levels of learning despite wide variation in pupil characteristics.

Professional teacher education module series. Conduct an occupational analysis, module A-7 of category A, program planning, development, and evaluation. (1978). Columbus: Ohio State University, National Center for Research in Vocational Education. 77 pp.

This is the seventh in a series of eleven learning modules on program planning, development and evaluation. This particular module aims at helping secondary and post-secondary vocational teachers carry out a task analysis and subsequently develop a curriculum.

A criterion referenced assessment of the teacher's performance in undertaking a task analysis is carried out upon completion of the module. Although the DACUM method is discussed it is not suggested that the individual teacher undertakes the task analysis using this approach. The frequency, importance and learning difficulty of the task is determined but no detailed statistical analysis is carried out.

Pulsford, T. (1984). Collecting technological change information for TAFE. Occasional Paper No. 4. Adelaide: TAFE National Centre for Research and Development. 45 pp.

This paper is concerned with information about technological change. The paper sets out to identify groups within TAFE which use this information; to categorise in very broad terms the various uses to which this information is put; and to identify the kinds of structural and organisational impediments to the effective collection and use of this information. The paper does not set out to discuss the various methods of collecting occupational information. The author is concerned with bringing to light the issues involved in collecting information on technological change, the difference between information required by policy and curriculum and the obstacles to getting the information.

A model is presented for organising the collection, processing and dissemination of technological change information within TAFE Authorities. The model includes mechanisms for evaluating the extent to which various groups

within TAFE Authorities have their information needs met, and stresses the need to continually adjust information paths and strategies to meet the current needs of the various end users of technological change information. The model proposes a central co-ordinator with monitors to collect and disseminate information, to monitor the directions in which industry sections are heading and to liaise between central elements of the information and the end users of the information and thus make possible predictions. The author proposes the model not as an absolute solution to the difficulties of collecting technological change information in TAFE, but as a means of prompting discussion by concerned parties in TAFE.

Sandery, C. (1984). Occupational curricula development: A guide for teachers of trade education. Adelaide: TAFE National Centre for Research and Development. 92 pp.

Sets out clearly the questions a curriculum developer asks as he/she proceeds through the stages of curriculum development. Suggestions and guidelines are then given to answer these questions. Topics discussed include starting the curriculum development task, a simple model of curriculum development, planning the project, investigation, syllabus documentation, implementation, curriculum evaluation, design of short course, and a complete model of occupational curriculum development. Appendices cover: terms related to curriculum development, an example analysis checklist, panelbeating competency chart, process to design a curriculum, example format of a checklist for selecting data gathering methods, categories of educational objectives, syllabus specification, typical module format, learning contract form and an example of a certificate of achievement.

Schroeder, P.E. (Ed). (1975). Proceedings of a symposium on task analysis/task inventories. Columbus: Ohio State University, Center for Vocational Education. 131 pp.

Contains reprints of thirteen papers presented at the symposium at which 158 persons met to discuss the processes and techniques of job task analysis and the use of task inventories.

Sinnett, W.E. (1974). The application of DACUM in retraining and post-secondary curriculum development. 2nd Ed. Toronto. Hunter College of Applied Arts and Technology. 230 pp.

Consists of an introduction, five parts and appendices. The introduction defines DACUM as it is used by the author and outlines the rationale for conducting DACUM research at national, state and regional levels.

Part I presents a review of some of the 1970s literature dealing with 'front-end' analysis which may be useful to curriculum developers and teachers engaged in systems approaches to curriculum development. Part II deals with the different ways in which the processes and products of DACUM have been used and implemented in different places in Canada.

Part III is a DACUM procedures manual. It refers to materials prepared by the author to introduce DACUM to any new group and to begin training co-ordinators to carry out the DACUM process. Part IV consists of a collection of DACUM chart information (not DACUM charts) described by subject or job designations and a card format.

Part V draws conclusions and implications about the advantages and disadvantages of DACUM and makes recommendations for its future use. The appendices provide examples of DACUM charts and other tools that have been used by DACUM practitioners.

Smith, J.E., & Hakel, M.D. (1979). Convergence among data sources, response bias, and reliability and validity of a structured job analysis questionnaire, Personnel Psychology, 32, 677-92.

This study examines questions which are pertinent for the use of the Position Analysis Questionnaire (PAQ) and other structures of job analysis and job evaluation techniques. Twenty-five State government jobs were selected and PAQs were completed by a variety of people: incumbent, supervisor, job analyst, student (only given job titles), and student (given job specifications). The results raised questions about the sensitivity of the PAQ and other structured job analysis questionnaires to differentially diagnose job information.

Smith, J.K. (1983). Quantitative versus qualitative research: An attempt to clarify the issue, Educational Researcher, 12(3), 6-12.

Initially a historical overview of methodology in educational and social research is given. The paper then concentrates on a description of the differences between quantitative and qualitative research. The discussion is centred on three questions: (1) What is the relationship of the investigator to what is investigated? (2) What is the relationship between facts and values in the process of investigation? (3) What is the goal of investigation? The author concludes that the two approaches are not complementary, that the assumptions upon which the two approaches are based are different and that the research outcomes will differ depending on the approach applied.

Teryek, C.J. (1979). An overview of job analysis. In T. Abramson, et al. (eds) Handbook of vocational educational evaluation. 19 pp.

This contribution provides definitions used in task analysis and gives a brief description of the various procedures in use in the United States. These include US Department of Labour methodology, position analysis questionnaire, US Employment Service technique, functional job analysis, job element method and a combined approach. The application of job analysis is discussed in such areas as performance evaluation, training programmes, counselling and recruitment.

Trattner, M.H. (1979). Task analysis in the design of three concurrent validity studies of the professional and administrative career examination, Personnel Psychology, 32, 109-19.

The Professional and Administrative Career Examination (PACE) is used as part of the examining procedure to select employees for approximately 120 different professional and administrative occupations in many agencies of the US Civil Service. Trattner's aim was to test the validity of the PACE test using the Comprehensive Occupational Data Analysis Programs (CODAP).

Ulschak, F.L. (1983). Human resource development: The theory and practice of need assessment. Reston Publishing Company. 290 pp.

This is a comprehensive book on training needs assessment. Part 1 deals with

the needs assessment environment, and covers definitions and models of needs assessment, the training environment and its influence on needs assessment, and criteria for choosing between needs assessment methods.

Part 2 focuses on actual needs assessment methods, i.e. Nominal Group Technique, Delphi technique, and the Critical Incident Technique. Ulschak covers each method in detail and numerous case studies and examples are provided. In addition, composite methods (comprising derivatives or combinations of the three methods mentioned) are discussed, and there is a thorough discussion of performance appraisal and other organisational sources of needs assessment data.

Watson, T. DACUM process of curriculum development. Institute of Technical and Adult Teacher Education. (Circular to colleagues). 4 pp.

This is a brief overview of DACUM for the benefit of lecturers. The author lists the advantages of DACUM and suggests that this method will be used more frequently in community education programmes in the future.

Weaver, W.T. (1971). The Delphi Forecasting Method. Phi Delta Kappan, 52, Jan., 266-271.

The first part of this paper describes the Delphi method with reference to applications in educational planning. The second part provides a penetrating critique of Delphi from which the following weaknesses are identified: (1) there is difficulty in interpreting the significance of 'convergence of opinion under the conditions imposed by Delphi', (2) 'Delphi at present can render no rigorous distinction between reasonable judgement and mere guessing, nor does it clearly distinguish priority and value statements from rational arguments nor feeling of confidence and desirability from statements of probability'.

Yet Delphi 'in combination with other tools, is a very potent device for teaching people to think about the future of education in much more complex ways than they ordinarily would'.

The author notes that Delphi 'is a planning tool which may aid in probing priorities held by members and constituencies of an organisation'. Weaver's critique is worth reading by anyone who wishes to use the procedure.

Zemke, R., & Kramlinger, T. (1982). Figuring things out: A trainers' guide to needs and task analysis. Massachusetts: Addison-Wesley. 348 pp.

This book covers a wide range of techniques for needs assessment, including interviews, focus groups, etc. and task analysis for example, flow charting, and behaviourist stimulus-response approaches. Numerous examples are provided.

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Bunning, R.L., & Turoff, M. (1979). The Delphi technique: A projection tool for serious inquiry. In J.J. Jones & J.W. Pfieffer (Eds), The 1979 annual handbook for group facilitators. California: University Associates. Inc. pp.174-181.

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